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**Institut für Evaluative Forschung
in Orthopädischer Chirurgie**

Bern, August 22nd, 2006 Ae/kn

Dear Dr. Ahmad,

First of all, I would like to thank you for having given me the opportunity to work with several of your highly committed and competent medical people during my stay in Rawalpindi/Islamabad. I would also like to thank you for the support I enjoyed everywhere I visited and the great hospitality of your country at all levels. Please allow me to give a summary of my experience and thoughts from my stay in Rawalpindi, in the hope this may give you some help for taking decisions and planning the further development of spinal care at any level in your institution and country.

It is a big irony that a severe calamity like the earthquake of last October has not only brought a significant number of suffering people but also the need to think about the possibilities to treat patients with spinal injuries in particular, and spinal disorders in general in your country. The sudden earthquake has affected several hundred thousands of people and has left you with the most severe injuries that are possible in spinal pathology. I think your doctors have managed to deal with this irresolvable problem in a very professional way. Certainly not all the surgeries could go well, since the experience was lacking to deal with this kind of problems, and many of the patients could not be treated since there were too many around. However, generally speaking, many of the patients with spinal injuries followed by paraplegia or tetraplegia have been treated appropriately and are being rehabilitated with great skills.

During my visit we have observed the following issues, which remain to be resolved and need some further expertise and development for the future:

1. The primary spine surgery as a critical live saving procedure was a big challenge, since this has become today a relatively highly specialized surgery, which needs special training and skills. Consequently not all surgeries could be done appropriately and therefore some patients were left with significant secondary deformities and malpositions, such as non-unions of the spine and partial implant complications like infections. Some patients with initial deformities could initially not be corrected surgically, and have consequently developed severe secondary deformities, which are now difficult to correct.
2. The acutely treated patients have been incorporated in a rehabilitation program, and some of them have been able to leave the rehabilitation centre and returned back to their original environment. However, there is a number of patients, who cannot return to their original environments due to the inaccessibility or the simplicity of their houses, which do not allow a paraplegic patient to survive without significant complications like pressure sores and decubitus ulcers, and finally kidney insufficiencies because of persistent and recurring urinary tract infections. Therefore, a solution must be found for those patients, who have been treated acutely and where the rehabilitation has been successfully started, but who remain in the rehabilitation centres, because they cannot return. A system should be created, where these patients can return to, and where they can become a useful part of the society and be integrated in a regular life.

Ad 1: The experience with spine surgery in the Western countries has shown that spine surgery is a specialty, which needs to be practised and trained as such. It is no longer possible that neurosurgeons or orthopaedic surgeons who are not on a regular bases dealing with spinal problems can handle the advanced technology of spine surgery. The spine surgery complications are significantly linked to the training of the surgeon as well as the number of cases he/she is dealing with. This means that first of all spine surgeons need to be trained as spine surgeons, and secondly they must have access to a sufficient number of cases per year to maintain and to expand their expertise. It is also not recommended that every hospital does spine surgery amongst other things with relatively little expertise. Traditionally spine surgery is a sub-discipline of orthopaedic surgery. Notwithstanding, in the Western world, spine surgery is increasingly being undertaken by Neurosurgeons. This fact underscores the need of centralization of spinal surgical treatment in major centres to assure sufficient number of cases and to make sure that such a centre can employ one or several specifically

trained spinal surgeons. This centralization will also allow a proper standardized training of the upcoming new generation of surgeons.

It will definitely reduce the costs if competent surgeons deal with this problem, since the costs of the surgery are significantly linked to the rate of complications, which can definitely be kept low by competent surgeons. Every complication will multiply the costs of a simple spine surgery, and this has to be avoided as much as possible.

In Western countries where there has been a long history of diversity in the development of medical specialities of all kind at each hospital, even a small size hospital would strive to develop expertise in sub-disciplines of orthopaedic surgeries such as spine surgery, hip, knee, upper extremity surgery etc. Such ventures often result in expensive and unaffordable failures. In Pakistan, where you are starting on a new green pasture, you have the opportunity to build such expertise with a vision of centralisation, and to avoid all the costly mistakes that we have repeated in Western industrialised countries.

It seems to me that in Pakistan spine centres could be created in the major cities like Karachi, Islamabad/Rawalpindi, Lahore etc., preferentially linked to Medical Schools or academic institutions or major Medical Centers, where other disciplines in surgery are also available. You have already got such a centralized medical centre in the form of the Armed Forces Institute of Rehabilitation Medicine, which is linked to a major hospital environment and medical school. A significant part of its activities deals with spinal disorders. It would be more than natural to link a major national spine centre with this rehabilitation centre, more so, since there is already a highly qualified spine surgeon available in the combined Military Hospital, which again is linked to the Armed Forces Institute of Rehabilitation Medicine. In Rawalpindi, in fact the situation is offered, where a so-called „Continuum of care“ can be established, that means a continuum of care for spinal disorders beginning with the diagnostic evaluation and work-up with making proper indications, performing proper surgery and finally performing a proper rehabilitation program. I think the whole issue of the diagnosis, treatment and rehabilitation of spinal injuries and disorders could be integrated in a national institute for spinal disorders, where all these different aspects are reunited under one roof, very similar to the very impressive Institute of Cardiology that I have seen in Rawalpindi. Since spine surgery is not wide spread yet in Pakistan such an institute would take a motor function in training and educating young surgeons for the

need of the country, who would go through the same school with the same standards of training and applying the same standards of care all over. This would create a very strong generation of spine specialists in your country, which could be a model for many other countries like yours.

During my stay I came to the conclusion that it is not vital to have surgeons from Pakistan to visit major institutions in Europe or the United States to become so-called spine surgeons. Much more so it would be necessary to have excellent outstanding spine surgeons from European countries and the U.S. to come to Pakistan and work side by side with the local surgeons to train them in their own environment with their own patients and not in a centre with a sophisticated medicine, which has nothing to do with what these people need. This does not mean that the quality of the surgery done in Pakistan should be less than in one of the European centres, however, it should be adapted to the needs and to the patients in this country. I have seen and worked with a spine surgeon, who has all the knowledge of a modern spine surgeon of the Western world, however, he has developed a tremendous capability and „feeling“ for the needs of the local patients and does an extraordinary professional job for these patients. I am absolutely convinced that he would be able to train a whole generation of Pakistani spine surgeons and to be a role model for them to develop their skills. This does not exclude that once they have had their basic training, that they would visit one of the major centres abroad to expand their knowledge and to widen their view, but to make them return back to tackle their own major tasks in Pakistan.

Along with the sophistication of spine surgery, obviously also the rehabilitation medicine has to develop to work hand in hand with the surgical discipline. Again there is no doubt in my mind that the Armed Forces Institute of Rehabilitation Medicine is a premier address for that, also in comparison with the other institution that I have seen in Rawalpindi and Islamabad, respectively. I think the Armed Forces Centre could also be used for the training of surgeons on the civil side with a cooperation agreement, for instance with the Pakistan Institute for Medical Science, and its adjacent National Institute of Handicapped.

However, it does not make sense to my understanding to have this sophisticated surgery and rehabilitation institution been developed in different centres independently from each other and in such a close vicinity. I feel there must be cooperation between the civil and Armed Forces institutions as it has been demonstrated at the level of

rehabilitative medicine by Brigadier Pervaiz Rashid. I have been very much impressed by the coordinated efforts to deal with the paraplegic and tetraplegic patients in the different institutions in Islamabad, and Rawalpindi.

Ad 2: There is still a significant number of patients, which have been treated acutely and rehabilitated and who are waiting to return back to their families, respectively to their environment from where they are coming. However, as long as there is nothing, which is coordinating the help and the daily support, which will be a life-long support, there is no possibility to return. Therefore concepts need to be developed and realized, which should support these patients and make them survive outside of the centralized rehabilitation centres, preferably through their own contributions. This, however, will not be easy.

Many of these severely injured patients cannot return back to their original homes, since their ailment cannot be handled in the local living conditions. Therefore the creation of regional centres could be a solution - most probably in form of villages, where these people are living together under the supervision and with the help of educated, specifically trained personnel to support them in their daily needs and problems. However, to avoid that such a „village“ becomes a ghetto of disabled patients, who are basically excluded from the regular society and being served by the government, it will be absolutely crucial to have these people fulfill a useful task within the society. Obviously their task should not be to do some handicraft, for local markets as frequently suggested also in the Western world, but it should be something, which has also in a certain sense a return of investment, that means at the end these people should be able to support themselves. Therefore, for them it will be even more crucial than for healthy people to learn capabilities and skills, which will enable them to earn a living. Since many of these injured patients are still young, I strongly believe that they can be trained for specific skills and capabilities, which can be used in a more structured and organized production environment in such villages. We in the Western world know that many big companies do outsource today their IT-activities to India and maybe to Pakistan, specifically to Karachi, and also high-tech companies, specifically in the Biomedical and MedTech field do outsource the assembling of certain pieces of their production, since they can be cheaper done than in one of the original countries. It would be of great interest to explore the possibility of such villages to involve them in activities with major global companies, where a specific skill could be trained and made usable for such companies. For a certain degree it would also be a prestige for

such companies to have handicapped people involved, who can demonstrate through their work that they are a full member of the society. I have observed some of the patients working on the computer or working with their own hands. They have enormous skills, which can be definitely trained. Such a project would, however, make necessary that these patients would systematically be trained by competent teachers and be prepared for a life in a productive environment, which will assure their living. Here the Ministry of Trade, Economics and Technology Transfer should be motivated to get involved to help attract major local as well as global companies.

Again, I think the Armed Forces Institute of Rehabilitation Medicine could take a lead in the development of such models. When I was in China several years ago, I was invited to the biggest Medical School of China, which is the Western China University in Chengdou. At this time the Dean of the Medical School approached me to help him attract Western MedTech companies to settle on the University campus with productive units to assemble for instance orthopaedic implants or other medical devices. He thought that this would create a specific University brand, and would become a standard quality product in the country because of the alliance between the University and major MedTech companies. At this time in 1989 I was not able to convince companies in the Western world to do such a model, but in the meantime I know that there are MedTech companies settled in University campuses even in the Western World and working together with the University, where there is most important resource of economic success: young, keen and gifted students, hard working towards a successful life. I could imagine that a similar model could be applied in the environment of the Armed Forces Institute of Rehabilitation Medicine, be it directly in Rawalpindi or be it in a satellite institution closer to the original homes of the injured patients. Clearly such a model needs to be analyzed by competent economists and business developers, however, I am convinced that if the will would be here, a unique model could be developed, which would be finally beneficial for the injured patients as well as for the institution and the whole medical environment in Pakistan.

In conclusion, I am more than happy to take up some of the ideas if they find your approval to start contacts and possible cooperation's with different organizations. The aim would be to make out of this severe major catastrophic event of last October something, which may revitalize this whole region and become a model for dealing with handicapped people. I am not an economist nor I am a rehabilitation doctor, however, I have now a more than 25 years experience in spine surgery and also

significant contact with MedTech companies in the orthopaedic field that I feel confident to help directly in this field and to help trigger the other fields. Therefore I am at your disposition if you are interested in pursuing this project.

Yours sincerely,

A handwritten signature in blue ink, appearing to be 'M. Aebi', with a small horizontal line to the right of the name.

M. Aebi, MD, FRCSC

cc:

- H.E. Dr. Shaukat Aziz, The Prime Minister of the Islamic Republic of Pakistan (mhassan@apollo.net.pk)
- Brigadier Pervaiz Rashid, Senior Consultant & Commandant, Armed Forces Institute of Rehabilitation Medicine (AFIRM), Rawalpindi / PAKISTAN (fax number: +92 515798056)
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- Major Dr. Amir Alam Malik, Project Coordinator (dramiralammalik@yahoo.com), whom I kindly ask to assure the distribution of this report to all participants

